sPHENIX Project Status

John Haggerty
Brookhaven National Laboratory

Meeting with DOE

- Ed and Berndt were planning to meet with Time and Jehanne yesterday afternoon or today, but I have not heard from them
- The idea was to show them a project summary that fits into funds projected to be available at BNL

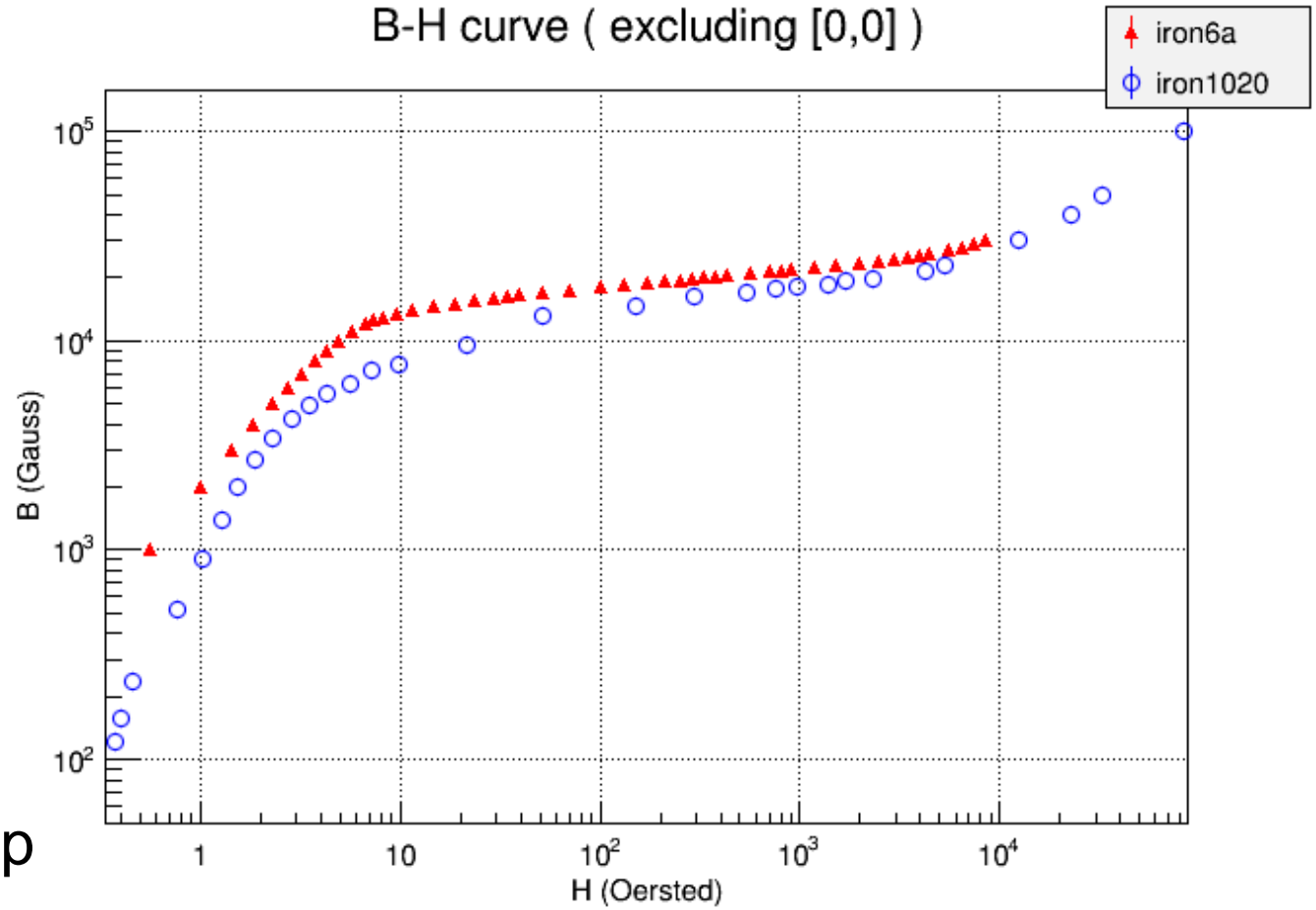
CALORIMETER DEVELOPMENT

HCAL

- Program Development funding for HCAL was extended for a third year, allowing us to build a full-size mechanical prototype
- The SOW is *almost* ready for bids, we are thinking about some of the final details
  - Specifications on steel?
  - Provision for chimney

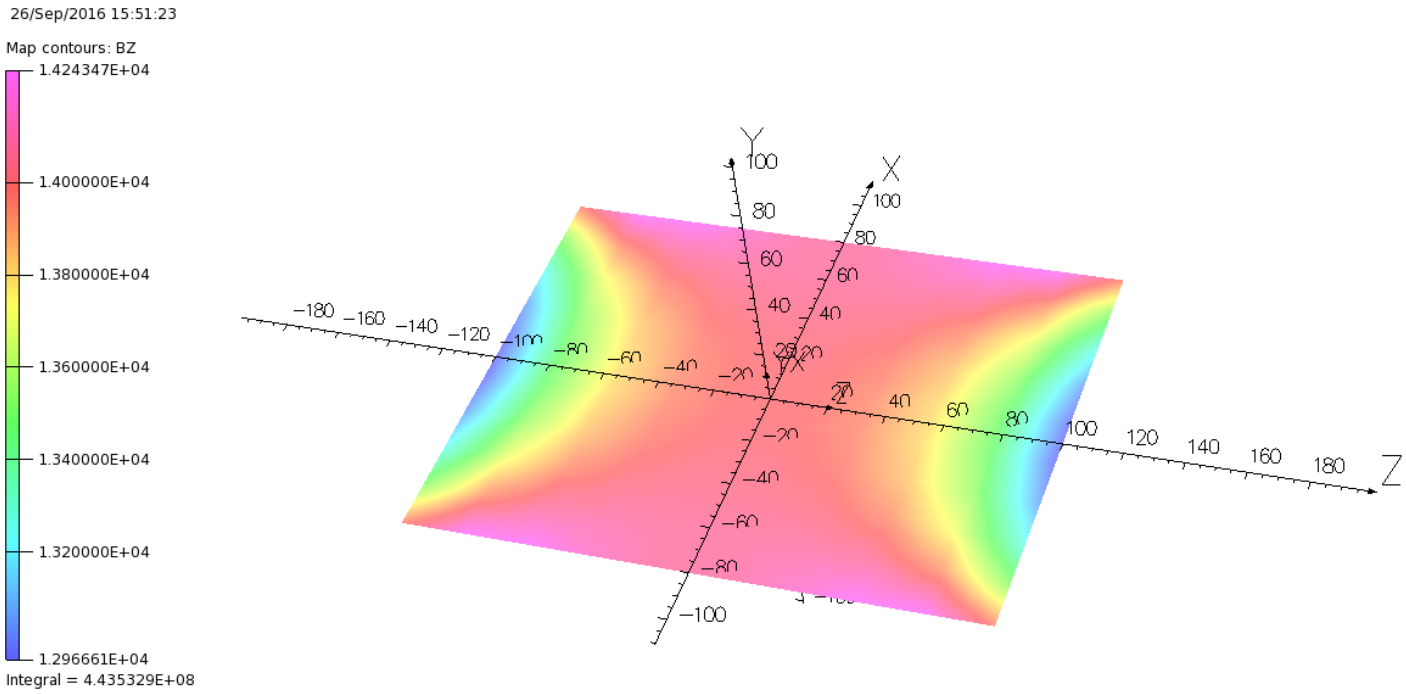
Differences in magnetic field with different steels

- I have used Wuzheng's model of sPHENIX which has used a file iron6a.bh, something that Wuzheng has used in g-2 for 1006 steel (with his smoothing)
- J. Haggerty pointed me to http://www.fieldp.com/magneticproperties.html#Steel1020 and I have to do $H = B/\mu_R$ (CGS) to make the B-H curve (and dropped the 1st non-zero point as its H is bigger than the 2nd H that "Opera" doesn't like).



From Kin Yip

B_z (magnetic field) in y=0 plane



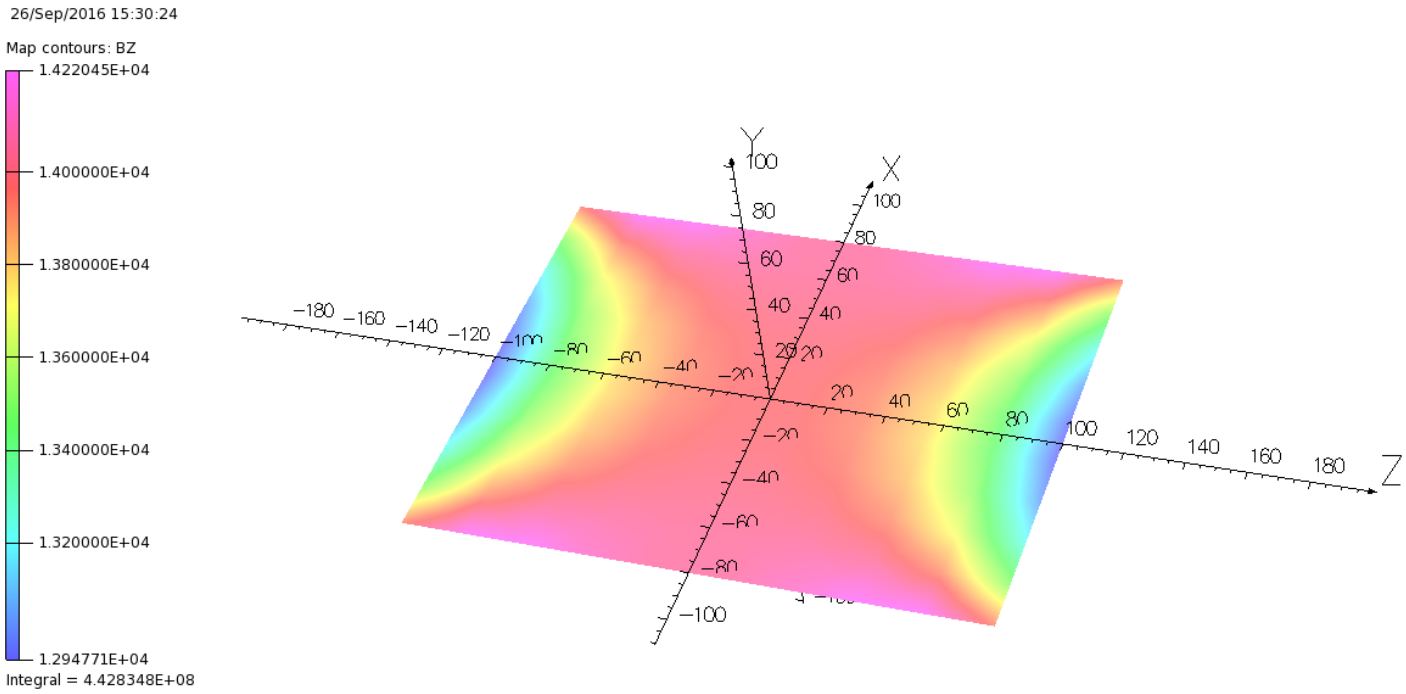
(Gauss)

(x/y/z coordinates in cm)

~Steel 1006

From Kin Yip

B_z (magnetic field) in y=0 plane



(Gauss)

(x/y/z coordinates in cm)

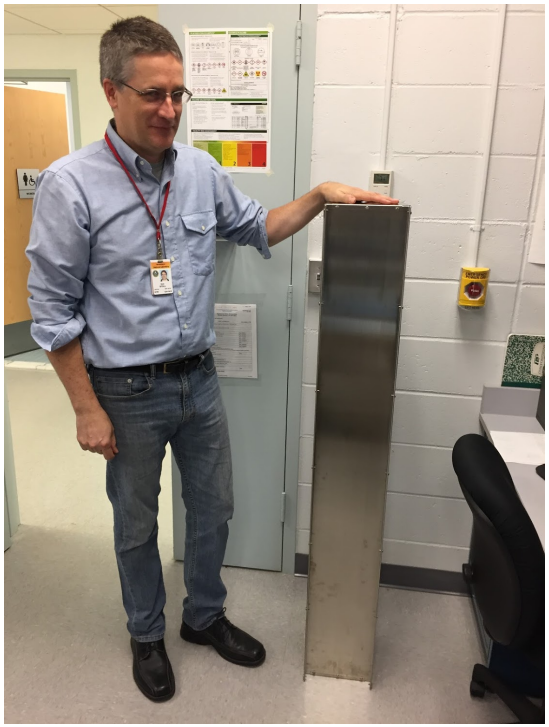
Opera Simulation Software COBHAM

~Steel 1020

From Kin Yip

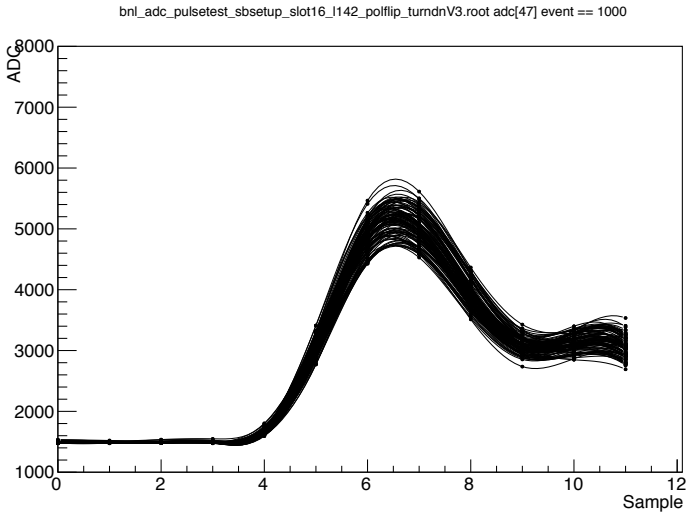
EMCAL

- “High rapidity” modules are under development at BNL and UIUC
- Several variations of the light guide are being studied
- There’s Sean with a half-sector enclosure



Electronics

- Steve is moving along on the amplifiers and controls
- Sarah and Chi are working with Ed Desmond on the new digitizers
- Here's some data taken by Sarah from an HCAL preamp



CALORIMETER BEAM TEST

When

- Ship during week of Jan 9
  - Do not arrive Fri Jan 13
  - Mon Jan 16 is MLK holiday
- Wed Jan 18 is installation day
- Thu Jan 19 ORC
- Fri Jan 20 Inaugural run
- Tues Feb 21 uninstall
- Thu Feb 23 or Mon Feb 27 ship it back

First go at a run plan

- Week 1Jan 18-25
  - Install, ORC, establish trigger and timing, verify instrumentation (Cerenkov, hodoscope, veto counters), MWPC, take first data with all calorimeters, PbGl, begin fine scan of EMCAL I on 2c table with HBD electronics
- Week 2 Jan 25- Feb 1
  - Fine scan/calibration of EMCAL II with new electronics on 2c table
- Week 3 Feb 1-Feb 8 (pre-Quark Matter)
  - Move EMCAL II in front of HCAL for combined running
- Week 4 Feb 8-15 (Quark Matter)
- Week 5 Feb 15-22
  - Final data set

Arrangements

- Eric updated the Wiki with some useful information
- On-site housing is tight (I'm wait-listed)
- Show your availability here:
  - http://doodle.com/poll/2inumufgkdw8davz
  - You can ask some of the people from last time, but I would suggest coming for 3-4 day stretches at a minimum
- Should someone look into scheduling a tour from QM?
- Make your Bien Trucha reservations

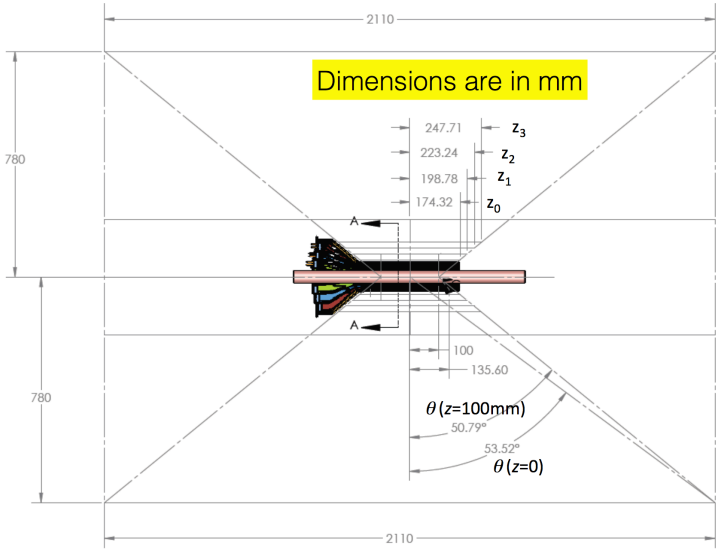
What happens after this???

- This may be the last beam test of an HCAL
  - The HCAL sectors are too large for FTBF… maybe we could squeeze in the Inner, but the Outer is to long and heavy
  - Mechanical prototype could be at BNL in summer
- The next step for the EMCAL is a half-sector (8x48)
  - One more beam test

TRACKING

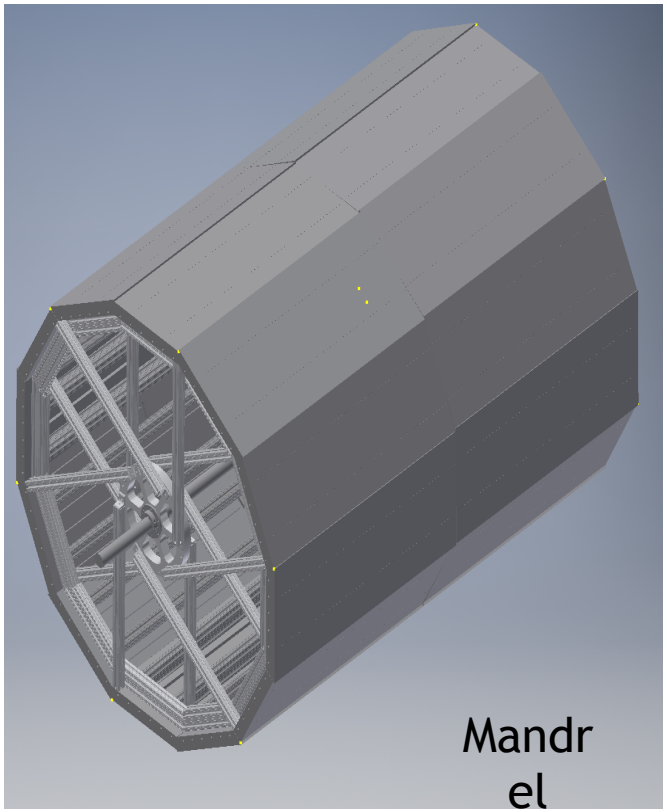
INTT

- Itaru led the discussion of making sure the INTT covers our acceptance
- Tuesday's tracking simulation meeting convened by Jin should help us sharpen our focus

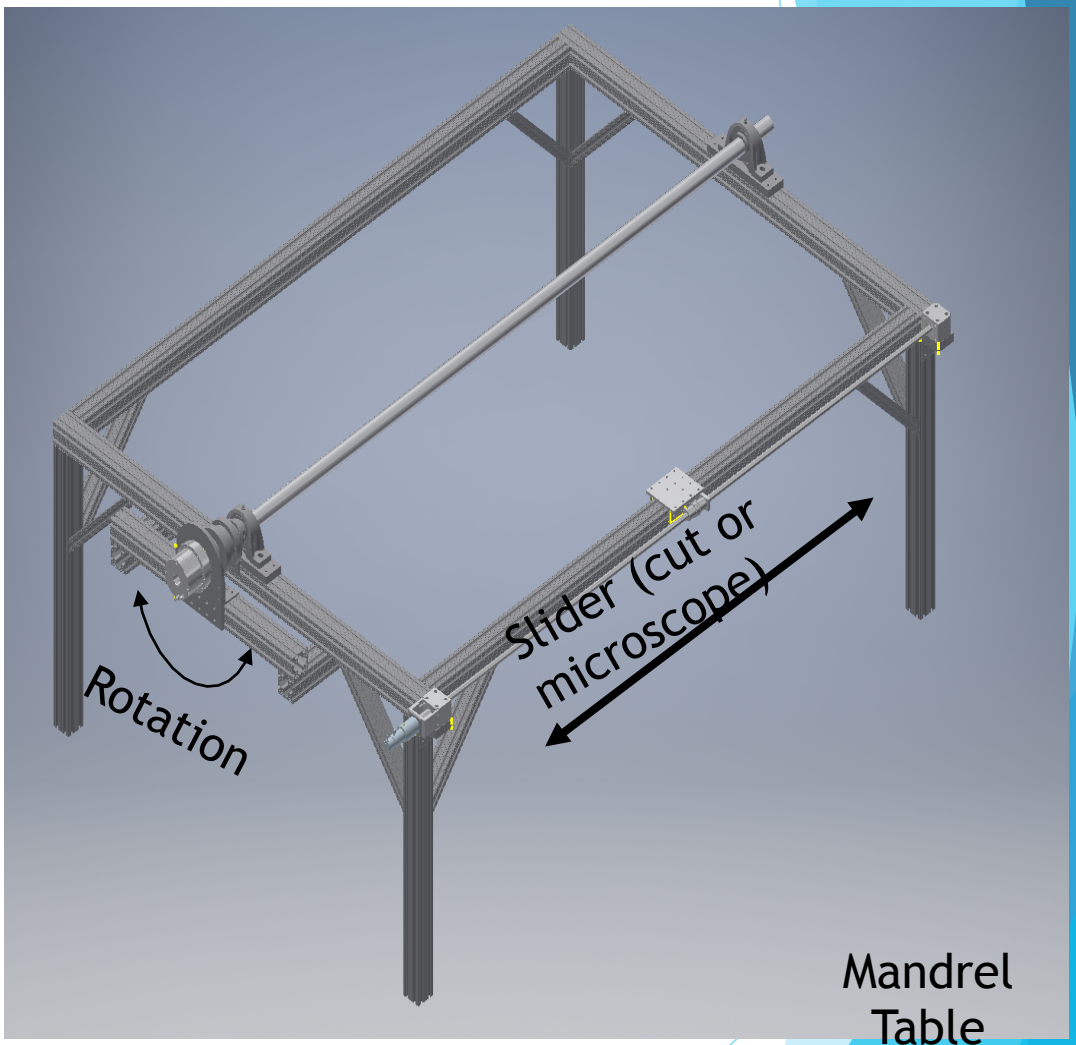


Reminder…

From Tom Hemmick



- Mandrel has bicycle-spoke frame.
- Machinable foam shell.
- Cut to a cylinder shape.
- Foam makes “vacuum head”.

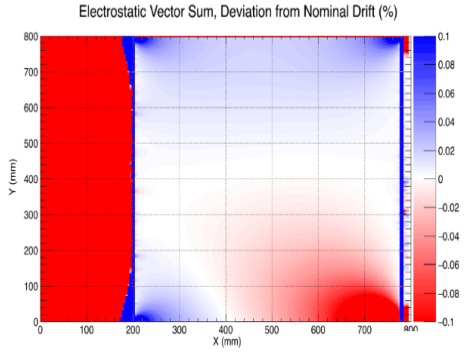


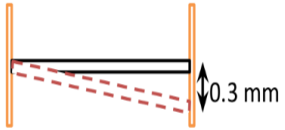
- Mandrel table = “home made lathe”
- Computer control: rotation & slider
- Feedback: motor AND load!

Field Studies from Prakhar

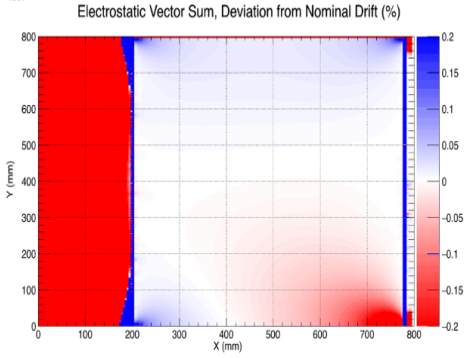
From Tom Hemmick

For 0.3 mm Lowering at Outer Cage
(Keeping at center of Inner)





Changed Scale from -0.2% to 0.2%



- Coupling these with GARFIELD will produce updated (relaxed) mechanical constraints.

- ANSYS calculations show field distortions induced by field cage manufacture errors.